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## No. III.

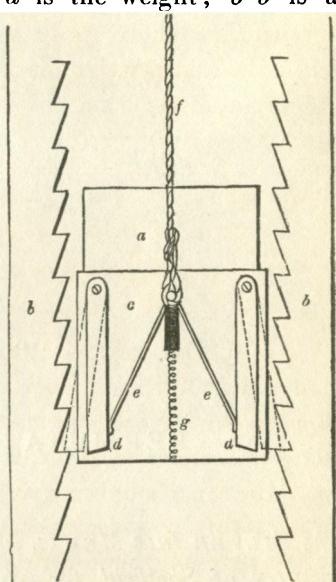
SUPPORTING A WEIGHT WHEN THE ROPE  
WHICH HELD IT BREAKS.

*The SILVER ISIS MEDAL was presented to Master W. J. FLIGHT, 16 King William Street, Strand, for his Method of Preventing Heavy Weights from Falling when the Rope or Chain which held them breaks; a Model of which has been placed in the Society's Repository.*

THE inventor of this apparatus is a boy about twelve years old; and the necessity, or, at least, the utility of it, suggested itself to him on seeing the construction of a large organ, built by his grandfather, in which part of the movement was given by the gradual descent of a weight heavy enough, if the cord or chain which supported it had broken, to burst through the floor on which the organ stood. It is true, the Society had already, in the year 1818, rewarded Mr. Prior for a similar invention, intended to prevent accidents in the vertical shafts of collieries from the rapid fall of a bucket in consequence of the rope breaking, and had published it in the 36th Volume of the Transactions. But being satisfied, on due inquiry, that the invention is original on the part of Master Flight, and finding that it differs in some points of construction from Mr. Prior's, though perfectly the same in principle, the Society have thought fit to reward the candidate, and to publish his invention, by way of

shewing their respect for early talent in one of the third generation of a family of ingenious mechanics, to the merit of whom the public are no strangers.

In the annexed figure, *a* is the weight; *b b* is a section of part of the vertical trunk in which the weight moves, two opposite faces of the same being cut into notches, forming two racks. Beneath the weight is the block *c*, to which are loosely attached, by screws, the arms, or palls, or clicks, *dd*. From the lower inner ends of the arms proceed the wires, or thin bars *e e*, having loops at their upper ends which fix on a pin, to which, also, the rope *f* is attached: a spiral spring *g* is also fastened to the same pin. In the block *c* is a groove, within which the pin is free to move. It is evident, from the above description, that the pin is acted on by two antagonist forces, namely, the spiral spring *g*, and the tension of the rope *f*, which is equal to the whole suspended weight; and, as long as the latter force is greater than the former, the pin will be retained at the top of the groove, and the arms *dd* in the position shewn in the figure; and thus no obstruction will exist to the free working of the weight up and down in the trunk. But, as soon as the rope *f* breaks, the spiral spring *g*, having nothing to oppose it, will contract, and, in so doing, will draw down the pin, will cause



the bars *e e* to diverge, and thereby will throw out the arms *d d* to the positions marked by the dotted lines, when they will hitch on two opposite teeth of the rack, and prevent the weight from falling any lower.

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## No. IV.

## PERMUTATION LOCK.

*The SILVER ISIS MEDAL was voted to Mr. A. MACKINNON of Sheffield, for his Permutation Lock; one of which has been placed in the Society's Repository.*

THE general principles of those locks, which, like Barron's, depend for their security on a series of tumblers, which are raised to different heights by means of irregular steps, or notches in the key, are too well known to need description.

The object of the present invention is two-fold,—to enable any person to change at will the *pattern* or arrangement of the movable parts in his lock and key, or to keep his key, except when actually in use, in such a state as to render it unavailing to any one but himself.